EXHIBIT K

TO THE DECLARATION OF ARPITA BHATTACHARYYA IN SUPPORT OF ASETEK DANMARK A/S'S MOTION FOR PARTIAL SUMMARY JUDGMENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	**Confirmation No.** 3553
Lyon, Geoff Sean	**Examiner:** Rojohn III, Claire E.
Serial No. 15/912,478	**Art Unit:** 3763
Filed: March 5, 2018	**Attorney Docket No.**
For: FLUID HEAT EXCHANGE SYSTEMS	COOL2001USCIPCON2

FILED VIA EFS ON JANUARY 8, 2018

AMENDMENT RESPONSIVE TO OFFICE ACTION DATED OCTOBER 15, 2018

The Office Action dated October 15, 2018, set an extendable three-month period for responding, making a reply due January 15, 2019. Please amend the above-identified application as follows.

Amendments to the Claims are reflected in the listing of claims beginning on page 2.

Remarks begin on page 7.

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A heat exchange system comprising:

a housing defining a recessed region and an outlet port fluidicly coupled with the recessed region;

a heat sink having a plurality of juxtaposed fins defining a corresponding plurality of microchannels between adjacent fins~~, wherein a recessed groove extends transversely relative to the fins~~;

a manifold body at least partially defining an opening ~~generally~~ overlying the ~~groove~~microchannels,

wherein the manifold body defines a pair of compliant surfaces flanking the opening,

wherein the compliant surfaces urge against the fins, defining a flow boundary of the microchannels,

wherein the opening extends transversely relative to the fins and is configured to distribute a working fluid among the microchannels,

wherein the manifold body partially occupies the recessed region of the housing, leaving a pair of opposed portions of the recessed region unfilled, defining opposed exhaust manifold portions flanking the opening and being configured to receive the working fluid from the microchannels, and

wherein the housing further defines an outlet plenum configured to receive the working fluid from the exhaust manifold portions and to convey the working fluid to the outlet port.

2.-48. (Cancelled)

49. (New) The heat exchange system according to claim 1, wherein the housing defines a pump volute and a segment of a flow path, the segment configured to convey the working fluid from the pump volute to the opening at least partially defined by the manifold body, the heat exchange system

further comprising an impeller positioned in the pump volute and configured to urge the working fluid along the flow path.

50. (New) The heat exchange system according to claim 49, wherein the pump volute is positioned opposite the recessed region of the housing relative to the housing.

51. (New) The heat exchange system according to claim 49, wherein the housing defines a boundary of the pump volute, and wherein the flow path extends through the boundary of the pump volute.

52. (New) The heat exchange system according to claim 49, wherein the housing defines an inlet port, wherein the flow path extends from the inlet port to the outlet port and is configured to convey the working fluid from the inlet port through the pump volute, the manifold body, the microchannels, the opposed exhaust manifold portions, and the outlet plenum to the outlet port.

53. (New) The heat exchange system according to claim 52, wherein, in each of the microchannels, the flow path bifurcates into a pair of opposed, outwardly directed flow paths, wherein each outwardly directed flow path exhausts from the respective microchannels into a corresponding one of the exhaust manifold portions.

54. (New) The heat exchange system according to claim 53, wherein each pair of bifurcated flow paths recombine in the outlet plenum.

55. (New) A heat exchange system according to claim 52, further comprising a heat exchanger configured to reject heat from the working fluid, wherein the heat exchanger has an inlet fluidicly coupled with the outlet port defined by the housing, wherein the heat exchanger further has an outlet fluidicly coupled with the inlet port defined by the housing.

a fluid outlet passage configured to receive the heat-exchange fluid from the first end and the second end of each microchannel, wherein the fluid outlet passage has a first outlet region positioned adjacent the microchannel first ends and a second outlet region positioned adjacent the microchannel second ends, wherein the seal separates the fluid inlet passage from the fluid outlet passage;

wherein a flow of the heat-exchange fluid through the one aperture in the plate bifurcates into two sub flows within each microchannel, wherein the first outlet region receives one of the two sub flows adjacent the microchannel first ends and the second outlet region receives the other of the two sub flows adjacent the microchannel second ends, wherein the two sub flows recombine in the outlet passage.

61. (New) The fluid heat exchanger according to claim 59, wherein the plurality of microchannels comprises at least two opposed outer microchannels and a centrally located microchannel positioned between the opposed outer microchannels, wherein the first outlet region is smaller adjacent at least one of the outer microchannels relative to adjacent the centrally located microchannel.

62. (New) The fluid heat exchanger according to claim 59, wherein the plurality of microchannels comprises at least two opposed outer microchannels and a centrally located microchannel positioned between the opposed outer microchannels, wherein the first outlet region comprises an outlet opening from each microchannel, wherein the outlet opening from the centrally located microchannel is larger than the outlet opening from at least one of the outer microchannels.

63. (New) The fluid heat exchanger according to claim 59, wherein the plate and the seal comprise a unitary manifold body defining a pair of compliant surfaces flanking the one aperture through which the heat exchange fluid is delivered to each of the microchannels.

64. (New) The fluid heat exchanger according to claim 63, wherein the compliant surfaces urge against the walls, defining a flow boundary of the microchannels.

65. (New) The fluid heat exchanger according to claim 63, further comprising a housing defining a recessed region at least partially occupied by the unitary manifold body.

66. (New) The fluid heat exchanger according to claim 65, wherein the housing defines a pump volute fluidicly coupled with the fluid inlet passage.

67. (New) The fluid heat exchanger according to claim 60, further comprising a housing defining a recessed region at least partially occupied by the unitary manifold body.

68. (New) The fluid heat exchanger according to claim 67, wherein the housing defines a pump volute fluidicly coupled with the fluid inlet passage.

Remarks

Claim 1 is pending. By this Amendment, claim 1 is are amended and claims 49 through 68 are added. No claims are presently cancelled or withdrawn. Thus, following entry of this Amendment, claims 1 and 49 through 68 will be pending.

Reconsideration and withdrawal of all outstanding rejections are respectfully requested in view of the amendments above and the remarks that follow.

Rejections Under 35 U.S.C. § 103

Claim 1 stands rejected under 35 U.S.C. 103 as allegedly being obvious from U.S. Publication No. 2007/0272392 (Ghosh) and U.S. Patent No. 7,029,647 (Tonkovich).

The description of neither embodiment in the applied Ghosh reference provides for, suggests, or even appreciates the desirability of at least the following features recited in amended claim 1:

- a pair of compliant surfaces flanking the opening and urging against the fins;
- a housing defining an outlet plenum configured to receive the working fluid from exhaust manifold portions flanking the opening and to convey the working fluid to the outlet port.

As a threshold matter, Ghosh is silent regarding, and does not appreciate the desirability of providing, a pair of compliant surfaces urging against the fins. The specification in this application explains:

> The insert can have one or more (e.g., a pair) of generally conformable, flat surfaces 367 laterally flanking the aperture 361 (FIG. 11). As shown in FIG. 19, the surfaces 367 can generally overlie respective portions of the heat exchanger 320 (e.g., the distal ends 401 of heat sink fins 400 (FIGS. 16 and 17)), defining an upper flow boundary of the microchannels extending between adjacent fins, similar to the plate 240 shown in FIGS. 5 and 6. **The conformable surfaces 367 can urge against the respective distal ends, and conform to variations in height among the plurality of fins, and within a given fin (e.g., a fin having a non-linear longitudinal contour resulting from variations in fin height h_2 (FIGS. 18A and 18B)). The conformable surfaces 367 can reduce or eliminate the need for secondary machining operations used to make the respective distal ends of the fins generally coplanar and compatible with, for example, a rigid plate. As well, conformable surfaces 367 urging against the distal ends 401 of the fins 400 (400') can form a seal with the fins and prevent a working fluid from bypassing the channels defined between adjacent fins**.
>
> ***[Spec., pp. 26:17 – 27:2, emphasis added.]***

Further, neither embodiment in the Ghosh reference has an outlet plenum configured to receive the working fluid from exhaust manifold portions flanking the opening, as amended claim 1 recites. For example, Ghosh's circular (or first) embodiment lacks exhaust manifold portions flanking an opening as

claim 1 recites. And, Ghosh's second embodiment lacks an outlet plenum configured to receive the working fluid from flanking manifold portions, as claim 1 recites.

And, the applied Tonkovich reference does not provide for or otherwise overcome the noted and other deficiencies of the applied Ghosh reference regarding amended independent claim 1. Rather, Tonkovich's microreactor has been relied on as purportedly disclosing microchannels.

Thus, even after carefully reviewing Ghosh and Tonkovich, a person of ordinary skill in the art would have had no reason to modify either of Ghosh's devices to arrive at a combination of features as amended claim 1 recites. Accordingly, amended independent claim 1 would not have been obvious to a person of ordinary skill in the art from a review of Ghosh and Tonkovich.

The outstanding rejection of claim 1 should be withdrawn, and claim 1 should be allowed.

New Claims 49 through 68

New claims 49 through 68 present additional or alternative claimings to subject matter disclosed in this application. The presentation of these claims adds no new matter to the application.

Claims 49 through 59 depend from and thus incorporate the recitations of amended independent claim 1. Therefore, claims 49 through 59 must be patentable over the applied references for at least the same reasons as independent claim 1, as well as for each independently patentable combination recited among those newly added claims. Claims 49 through 59 should be allowed.

Independent claim 60 recites features lacking from both applied references. Accordingly, the combination recited in claim 60 would not have been obvious to a person of ordinary skill in the art from a review of Ghohs and Tonkovich. Claim 60 should be allowed.

Claims 61 through 68 depend from and thus incorporate the recitations of amended independent claim 60. Therefore, claims 61 through 68 must be patentable over the applied references for at least the same reasons as independent claim 60, as well as for each independently patentable combination recited among those newly added dependent claims. Claims 61 through 68 should be allowed.

No Disclaimer

Nothing herein should be deemed as a disclaimer or surrender of any rights, acquiescence in any rejection (or objection), or a waiver of any arguments that might have been raised but were not raised herein or otherwise during prosecution of this application. All amendments herein are made without prejudice or disclaimer. Additionally, all rights in and to subject matter disclosed in this application are reserved, including the right to claim all such subject matter in this or a related application using the same or substantially similar claims to any claims that have been presented in this application, or using one or

more alternative claimings, regardless of whether such claims have been amended in, or withdrawn or cancelled from, this application during prosecution.

Conclusion

Each pending claim is in condition for allowance for at least the foregoing reasons. Accordingly, Applicant respectfully requests that all pending rejections be withdrawn and that a Notice of Allowance be entered as to all pending claims.

The Commissioner is hereby authorized to charge any fees, including extension fees, or to charge any additional fees or underpayments, or to credit any overpayments, to the Credit Card account referenced and authorized via the EFS Web (Electronic Filing System). As an alternative, in case the Credit Card cannot be processed, the Commissioner is hereby authorized to charge any fees, additional fees, or underpayments, or to credit any overpayments, to Deposit Account No. 50-1001.

Please contact the undersigned by telephone if such contact would further the examination of the present application.

Respectfully submitted,
GANZ POLLARD, LLC

Date: January 8, 2019

/Lloyd L. Pollard II/
Lloyd L. Pollard II
Registration No. 64,793

P. O. Box 2200
Hillsboro, Oregon 97123
Telephone: (503) 844-9009
Facsimile: (503) 296-2172
e-mail: docketing@ganzlaw.com